

269th EXECUTIVE BOARD MEETING

(Oct 20, 2016)

AGENDA ITEMS

1.	Confirmation of Minutes – 268 th Meeting of the Executive Board held on Sep 22, 2016
2.	PC-I for Dualization & Improvement of Indus Highway N-55 (Sarai - Gambela to Kohat) 128 KMs
3.	PC-I for Construction of Motorway from Yarik – Sagu 49 KMs
4.	Award of works for Construction of Shaheed Benazir Bhutto Bridge (SBBB) Over River Indus Connecting Chachran Sharif with Kot Mithan, Package-2A: Road from Chachran Sharif to Left Abutment of Main Bridge (Km 12+240 to Km 14+036) (1.796 KMs)
5.	Award of works for Contract No. LTP-SAR-2(469)-01 – Improvement, Widening and Construction of South Access Road (Package-II) from Link Access Road of South Portal to Qualandi (Km 1+103.884 to Km 8+492.96), 7.389 KMs of Lowari Tunnel Project
6.	Rationalization of Professional Fee Paid to Legal Counsels/ Lawyers on the Panel of NHA
7.	VO 4 of M/s SMADB: Construction of Khuzdar – Shahdadkot Road, Section-IV, Package-IV (M-8, Km 84+500 to Km 125+666)
8.	Construction of Hassanabdal – Havelian E-35 – ICB-E-35-I: Burhan to Jarikas (km 0+000 to km 20+400), Package-I
9.	Construction of Hassanabdal – Havelian E-35 – ICB-E-35-II: Jarikas ~ Sarai Saleh (km 20+400 to km 39+611), Package -II

ADDITIONAL AGENDA ITEM

I.	PC-1 for Malakand Tunnel Project
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Agenda Item No --- 1 ----

Confirmation of Minutes – 268th Meeting
of the Executive Board held on Sep 22, 2016

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Confirmed minutes have already been uploaded on NHA website

Agenda Item No. ...2....

PC-I for Dualization & Improvement of Indus Highway
N-55 (Sarai - Gambela to Kohat) 128 KMs

WORKING PAPER
FOR
National Highway Executive Board
Dualization & Improvement of Indus Highway (n-55)
(Sarai Gambila ~ Kohat)
Length = 128 km

Background:

The Indus Highway (N-55) is a 1,264 km long highway that runs along the Indus River connecting port city Karachi with Kohat & Peshawar via D. G. Khan & D.I.Khan. The Indus highway (N-55) being the second largest highway is an alternate North-South link after N-5. N-55 traversing 491 km in Sindh, 360 km in Punjab & 396 km in KPK, connecting Rajanpur, D.G.Khan, D.I.Khan, Bannu, Kohat & Peshawar, (a short cut of about 400 km from Karachi to Peshawar as compared to N-5). In recent years, Indus Highway has been unable to cope with the increasing traffic volume mainly large size of vehicles due to the lack of road capacity and deterioration of the road. As a result, traffic has become excessively shifted on N-5, causing frequent traffic jams etc. The project road is part of the program to provide relieve to the traffic on Indus highway. In order to address the afore-said issue, NHA proposed a program for up-gradation, improvement & dualization of Indus Highway (N-55) particularly from Rajanpur ~ D.G.Khan ~ Peshawar.

Name of the Project:

PC-I for Dualization & Improvement of Indus Highway (N-55) (Sarai Gambila ~ Kohat) Length = 128 km

Justification

Dualization of Indus Highway (N-55) is intended to provide safe, quick and more efficient passage to commuters and trade traffic. At few places N-55 has already been dualized from D.I.Khan to Sarai Gambila (100 km) & Darra Adam Kheil to Peshawar (40 km). In this regard, dualization of Indus Highway from Sarai Gambila to Kohat (128 km) is recently under progress along with the up-gradation of existing road from Sarai Gambila ~ Kohat ~ Peshawar. The project has gain significance due to CPEC (western corridor, connecting D.I.Khan near Yarak on N-55). Therefore dualization from Sarai Gambila to Kohat (N-55 128 km) is essentially required to facilitate all kind of traffic efficiently to Kohat & Peshawar, eventually will decrease travel time & cost.

**PC-I FOR DUALIZATION & IMPROVEMENT OF INDUS
HIGHWAY (N-55) (SARAI GAMBILA ~ KOHAT) LENGTH = 128 KM**

Estimated Cost

**DUALIZATION OF INDUS HIGHWAY
Sarai Gambila ~ Kohat (128 km)**

DESCRIPTION	AMOUNT (Rs.)
Sec.1 (Sarai Gambila~Karak) 61km	12,407.00
Sec.2 (Karak ~ Kohat) 67 Km	14,437.00
Total (Length = 128 km)	26,843.00
Total Civil works Cost (Rs. in Million)	26,843
Rehabilitation of Existing Road (Sarai Gambila ~ Peshawar) (Length : 117 Km Single Carraigeway & 40 Km Dual Carriageway)	9,000
Land Acquisition & Compensation to Structures	500
Relocation of Utilities	350
NHA Establishment Charges @ 2%	537
Detailed Design Charges @ 1%	268
Contingencies Charges @ 05%	1,342
Construction Supervision Charges @ 03%	805
Price Escalation (Applicable on 60% cost @ 6.5%)	1,047
Environmental Mitlgation Cost	200
Grand Total Cost (Rs. In Million)	40,893

Salient Features

Project length : 128 km
Type of project : Additional carriageway
Type of terrain : Plain /Rolling/Hilly

Road structure:

Carriageway : 7.3 m
Shoulder : 1m (inner) & 3m (outer)
Bridges : 01 major (at kurram river)
& 25 others
Culverts : 96 nos.
Design speed : 100 kph (in plain)
60 kph (in mountainous)
Row requirement : mostly dualization is done within available
ROW of Indus Highway, however land
will be required for re-alignment at
places & few built-up areas
PC-I Cost : Rs. 40, 893 Million

Financial Phasing:

Year Jan 2017 ~ June 2017 Rs. 8,179 millions
Year July 2017 ~ June 2018 Rs. 22,490 millions
Year July 2018 ~ Jan 2019 Rs. 10,224 millions

Economic Analysis

The results of the economic analysis are summarized as under:

Benefit Cost Ratio @ 12% Discount Rate : 1.62 : 1
Net Present Value : Rs.15,412.24 million
Internal Rate of Return : 16.77%

Sensitivity Analysis

Results @ 12% Discount Rate	With 10% Increased Costs	With 10% Decreased Benefits	With 10% Cost + & 10% Benefit
Internal Rate of Return (IRR)	15.75 %	15.65 %	14.68%

Implementation Period:

The period of implementation for the project is 24 months and it will commence in January 2017 onwards.

Estimated Cost:

Estimated consultancy cost of the project would be Rs. 40,893 million
Annex-(I).

Decision:

NHA Executive Board is requested to recommend the PC-I for Dualization & Improvement of Indus Highway (N-55) from Sarai Gambila to Kohat (Additional Carriageway) at a cost of Rs 40,893 million for consideration and approval of CDWP/ECNEC.

Agenda Item No. ...3....

PC-I for Construction of Motorway from Yarik – Sagu 49 KMs

WORKING PAPER
FOR
National Highway Executive Board (NHEB)
CONSTRUCTION OF 04 LANE MOTORWAY FROM
YARAK TO SAGU LENGTH = 50 Km

Background:

Prime Minister of Pakistan directed to dualize D.I.Khan to Zhob (N-50), however CPEC western corridor starts from Hakla on M-1 and ends at Yarak on N-55. To make continuity of CPEC (western corridor) towards Zhob and avoiding unnecessary additional length following existing road network (N-55 to D.I Khan) and than N-50 to Zhob, a new alignment (04 lane motorway passing through virgin area) is proposed straight from Yarak (N-55) to Sagu (N-50) bypassing D.I.Khan and saving almost 24 km length. This new alignment starts from Yarak (N-55) and crosses through (D.I.Khan - Tank Road) facilitated with an interchange and (D.I.Khan - Kulachi Road) with flyover terminating at Sagu (N-50) with the provision of at grade intersection. This road further will lead to Zhob by the dualization of existing N-50.

Name of the Project:

PC-I for Construction of 04 lane Motorway from Yarak to Sagu
Length = 50 km

Justification

This proposed 04 lane motorway (Yarak to Sagu, 50 km) will become part of Western corridor alignment of the China Pakistan Economic corridor (CPEC). It will serve as an integral connection for the backward areas of southern KPK. It will also help the agriculture of the area by providing them the fast access to the markets. It may also facilitate to develop the industry in the adjoining area thus contributing/helping the development of the country.

**PC-I FOR CONSTRUCTION OF 04 LANE MOTORWAY FROM
YARAK TO SAGU LENGTH = 50 Km**

Estimated Cost

Bill No	Description	Amount (Rs.)
1	Earth Work	2,153,578,609
2	Sub Base & Base	3,555,527,140
3	Surface Course & Pavement	1,311,369,090
4a	Structures (Box Culverts)	812,186,877
4b	Structures (Retaining Walls & Toe Walls)	366,629,367
4c	Structures (Underpasses)	268,418,500
4d	Structures (Flyovers)	63,636,626
5	Drainage and Erosion Works	431,040,363
6	Ancillary Works	1,089,972,727
6a	Ancillary Works (Toll Plaza)	169,000,000
7	General Items	71,220,000
Amount (Rs)		10,292,579,299
Construction Cost (Rs. In Million)		10,293.00
8	Land Acquisition, Relocation of Utilities & Compensation of structures	1,300
9	NHA Establishment Charges @ 2%	206
10	Detailed Design Charges @ 1%	103
11	Contingencies Charges @ 5%	515
12	Construction Supervision Charges @ 3%	309
13	Price Escalation (Application on 60% cost @ 6.5%)	401
14	Environmental Mitigation Cost	100
15	Security Cost during execution	100
Grand Total Cost (Rs. In Million)		13,327

Salient Features

Project length	:	50 km
Type of project	:	04 Lane Motorway (access controlled)
Type of terrain	:	Plain

Road structure:

Carriageway	:	7.3 m
Shoulder	:	1m (inner) & 3m (outer)
Interchange	:	01 (at D.I Khan-Tank Road) 01 intersection at Sagu
Culverts	:	34 nos.
Underpasses	:	07 nos
Flyover	:	01 nos
Design Speed	:	120 kph
ROW Requirement	:	100m (50m either side)
PC-I Cost	:	Rs. 12,917 Million

Financial Phasing:

Year Jan 2017 ~ June 2017	Rs. 1,938 million
Year July 2017 ~ June 2018	Rs. 7,104 million
Year July 2018 ~ Jan 2019	Rs. 3,875 million

Economic Analysis

The results of the economic analysis are summarized as under:

Benefit Cost Ratio @ 12% Discount Rate	:	1.66 : 1
Net Present Value	:	Rs.6,789.74 million
Internal Rate of Return	:	19.45%

Sensitivity Analysis

Results @ 12% Discount Rate	With 10% Increased Costs	With 10% Decreased Benefits	With 10 % Cost + & 10% Benefit
Internal Rate of Return (IRR)	17.90 %	17.74 %	16.28 %

Implementation Period:

The period of implementation for the project is 24 months and it will commence in January 2017 onwards.

Estimated Cost:

Estimated consultancy cost of the project would be Rs. 13, 327 million.

Decision:

National Highway Executive Board (NHEB) is requested to recommend the PC-I for Construction of 04 Lane Motorway from Yarak to Sagu at the cost of Rs 13,327 million for consideration and approval of CDWP/ECNEC.

GOVERNMENT OF PAKISTAN

WORKING PAPER

For
269th NHA EXECUTIVE BOARD MEETING

**CONSTRUCTION OF SHAHEED BENAZIR BHUTTO
BRIDGE OVER RIVER INDUS CONNECTING
CHACHRAN SHARIF WITH KOT MITHAN,**

PACKAGE-2A:

**ROAD FROM CHACHRAN SHARIF TO
LEFT ABUTMENT OF MAIN BRIDGE
(KM 12+240 TO KM 14+036) (1.796 KM).**



SEPTEMBER, 2016

NATIONAL HIGHWAY AUTHORITY

Procurement & Contract Administration Section
ISLAMABAD

**WORKING PAPER
FOR
NHA EXECUTIVE BOARD**

Reference: Working Paper of the award of project **Construction of Shaheed Benazir Bhutto Bridge (SBBB) Over River Indus Connecting Chachran Sharif with Kot Mithan, Package-2A: Road from Chachran Sharif to left Abutment of Main Bridge (Km 12+240 to Km 14+036) (1.796 KM)** presented in 268th NHA Executive Board Meeting.

01. DELIBERATIONS OF 268TH NHA EXECUTIVE BOARD MEETING:

NHA Executive Board (meeting held on 22nd September-2016), while deliberating upon the agenda item regarding award of subject project has decided to verify the similar work experience of M/s AKK Construction Company (Pvt.) Ltd. (i.e. Construction of B/T Road Shakh Barozai District Killa Saifullah at Muslim Bagh) through a site visit by deputing team of NHA Officers.

Accordingly, following NHA team visited BDA Quetta office and project site at Muslim Bagh on 6th to 8th October 2016:

- | | | | |
|----|---------------------|-----|------------------------------|
| a. | Mr. Javed Akhtar | ... | Dy. Director (Insp)-I NHA HQ |
| b. | Mr. Tariq Riaz | ... | Dy. Director (P&CA) NHA HQ |
| c. | Mr. Sultan Shehryar | ... | Dy. Director (Monit) Quetta |

Salient features of the report are as under:

1. Team visited the site alongwith Sub-Engineers of BDA. As per physical verification, 43 KM road was shown to NHA team starting from Muslim Bagh to end connecting Shakh Barozai, Sultan Zai area etc, by the BDA project staff. Important features of the road observed by NHA Team are given below:

Road width	...	Single lane 3.65 m in hilly area involving cut & fill
Structures	...	Causeways, culverts, retaining walls etc.

2. Prior to site visit, NHA team asked drawings and Bill of Quantities (BOQ) of the said road from BDA, HQ Quetta. It was informed that said record would be available at site but this could not be arranged by BDA.

Site visit report is attached at **Annexure-A**.

02. **SUPPLEMENTARY DOCUMENTATION BY M/S AKK ON HIS SUBMITTED BID RATES:**

M/s A.K.K. Construction Co., vide letter No. Nil received in P&CA Section on 18th October 2016, has also provided rate analysis of their major work items with an offer of further clarification in this regard. M/s AKK has reaffirmed their quoted rates as workable (**Annexure-B**).

03. **DECISION SOLICITED:**

The Executive Board is requested to accord approval for award of the works for **Construction of Shaheed Benazir Bhutto Bridge (SBBB) Over River Indus Connecting Chachran Sharif with Kot Mithan, Package-2A: Road from Chachran Sharif to left Abutment of Main Bridge (Km 12+240 to Km 14+036) (1.796 KM)** to the lowest evaluated bidder i.e M/s A.K.K. Construction Co., at their evaluated bid price of **Rs. 369,763,909** (Rupees Three Hundred Sixty Nine Million, Seven Hundred Sixty Three Thousand, Nine Hundred and Nine only) which is **24.77% below** the Engineer's Estimate of **Rs.491,501,833** based on CSR-2014 subject to receipt of satisfactory supporting documents from BDA.

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GOVERNMENT OF PAKISTAN

WORKING PAPER

for
269th NHA EXECUTIVE BOARD MEETING

**CONTRACT NO. LTP-SAR-2(469)-01 –
IMPROVEMENT, WIDENING AND
CONSTRUCTION OF**

**SOUTH ACCESS ROAD
(PACKAGE-II) FROM LINK ACCESS ROAD
OF SOUTH PORTAL TO QUALANDI (KM
1+103.884 TO KM 8+492.96), 7.389 KM OF
LOWARI TUNNEL PROJECT.**



SEPTEMBER, 2016

NATIONAL HIGHWAY AUTHORITY

Procurement & Contract Administration Section
ISLAMABAD

**WORKING PAPER
FOR
NHA EXECUTIVE BOARD**

Reference: Working Paper for the award of project Contract No. LTP-SAR-2(469)-01 – Improvement, Widening and Construction of South Access Road (Package-II) from Link Access Road of South Portal to Qualandi (Km 1+103.884 to Km 8+492.96), 7.389 Km of Lowari Tunnel Project presented in 268th NHA Executive Board Meeting.

01. DELIBERATIONS OF 268TH NHA EXECUTIVE BOARD MEETING:

NHA Executive Board (meeting held on 22nd September-2016), while deliberating upon the agenda item regarding award of the subject works to the lowest evaluated (only technically qualified bidder) M/s SAMBU-NISHAN JV, at their evaluated bid price of Rs.2,259,989,373 which is 27.59% above the Engineer's Estimate of Rs. 1,771,345,572 based on CSR-2014, deferred the case for the next board meeting.

02. VOLUNTEER DISCOUNT BY M/S SAMBU-NISHAN JV:

Meanwhile, M/s SAMBU-NISHAN JV: lowest evaluated bidder has offered volunteer discount of 5% on their already bid / quoted amount i.e. Rs.2,259,989,373. The current status of bid is as under:

Sr. No.	Name of the Contractor	Evaluated Bid Price (Rs.)	Discount offered	Amount after Discount (Rs.)	Variation from CSR-2014
(i)	M/s SAMBU-NISHAN JV	2,259,989,373	5% on all bid	2,146,989,904	21.2% Above

03. FOR INFORMATION OF NHA EXECUTIVE BOARD:

In view of very high bid, which is 21.2% above CSR-2014, it would be appropriate that the current process of procurement be annulled and fresh tendering process be initiated.

**NATIONAL HIGHWAY AUTHORITY
LEGAL-BUREAU**

**Working Paper
For the Executive Board**

Subject: - **Rationalization of Professional Fee Paid to Legal Counsels/
Lawyers on the Panel of NHA.**

Background

The Legal Bureau of NHA has been mandated to handle and to attend legal matters/issues effectively and efficaciously to preserve the interest of the Authority. The Legal Bureau defends cases lodged by opponent parties against NHA, at all levels such as District Courts, Wafaqi Mohtasib, High Courts, Supreme Court, Services Tribunal and Arbitral matters and also files recovery suits, appeals, review & revisions etc. on behalf of NHA besides rendering legal advices and opinions to all wings /sections of NHA.

2. The existing schedule of NHA Counsels for Court fees is given below, which was approved in 160th Executive Board Meeting held in September 24, 2008 (**Annex-A**):-

<u>Cases in</u>	<u>Limits Upto (Rupees)</u>	
	<u>Existing</u>	
a. Supreme Court of Pakistan (SCP)	-	100,000
b. High Courts (HC)/Federal Services Tribunal (FST)	-	50,000
c. District Courts etc/Wafaqi Mohtasib	-	15,000
d. Advocate-on-Record (SCP Cases)	-	10,000

3. Within the said limit hiring of good lawyers is mostly not possible.

Justification

4. Practically NHA is facing difficulties to engage lawyers for panel on such fees as compare to the fees being offered by the opponents to their Advocates. Thus, the authority has been passing through hard difficulties to achieve favorable results in legal battle.

5. In order to overcome hardships of NHA's Panel Advocates, inflation and rising costs/prices, NHA needs to revise and rearrange the schedule of professional fee being offered/paid at present to achieve the targets/save the Authority's interest.

6. Hence, it is suggested that the schedule of fee may be adequately increased so as to attract the competent lawyers for representing NHA in the Courts of law.

Proposal

7. Foregoing in view, it is proposed that schedule of fees may be revised as under:-

S#	Forum	Existing	Proposed Limit Upto
a.	Supreme Court of Pakistan (SCP)	100,000	Rs.200,000
b.	High Courts (HC)/Federal Services Tribunal (FST)	50,000	Rs.100,000
c.	Appellate Courts like Distt. Judges, Addl. Distt. & Session Judges	15,000	Rs.50,000
d.	Civil Courts	15,000	Rs. 40,000
e.	Advocate-on-Record (SCP Cases)	10,000	Rs.20,000

Powers to Sanction fee of Counsels

8. In the circumstances, it is proposed that Powers for sanctioning professional fee to the NHA Officers may be revised as per schedule given below, to minimize the work load to the higher hierarchy: -

	<u>Limits Upto (Rupees)</u>	
	<u>Existing</u>	<u>Proposed</u>
a. Director (Legal)	Rs. 25,000	Rs. 50,000
b. G.M Region/Project/ Secretary NHA	Rs. 50,000	Rs. 100,000
c. Member (Admn)/Zonal Members	Rs. 150,000	Rs. 200,000
d. Chairman	Above Rs. 200,000	Full Powers

9. Section 3.4 (10) of Regulations for Managing and Conducting Legal Affairs of NHA, stands amended accordingly.

10. The Executive Board is requested to approve the proposal for revision of schedule of fees and sanction of fee as mentioned at paras 7/8 above .

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NATIONAL HIGHWAY AUTHORITY

CONSTRUCTION WING

*Working Paper**for the Executive Board.*

CONSTRUCTION OF KHUZDAR-SHAHDADKOT ROAD, SECTION-IV,
PACKAGE-IV (M-8, Km 84+500 TO Km 136+000)
VARIATION ORDER NO.04

Issue under Consideration:

National Highway Executive Board is being requested to approve Variation Order No.04 amounting to **Rs. 695.28 Million** with revised contract cost of Rs. 2,902.56 Million (31.5% above than approved cost).

1. Introduction:

1.1 M-8. This 892 km long project is being developed with the long-term aim of connecting Gwadar Port with main economic centers of Pakistan and for providing connectivity to Afghanistan/China. M-8 has been divided into three major segments (Map at Annex-A):-

Segment	Km	Status
Gwadar – Hoshab	240	Ongoing
Hoshab – Khuzdar	410	Shelved *
Khuzdar – Ratodero	242	Ongoing
	892	

*Note:- Shelved for the present due to huge cost/time factors

1.2 Khuzdar-Shahdadkot-Ratodero. This segment of M-8 around 213 Km was further divided into 5 x Packages. Absence of adequate funds resulted in initiation of only two packages i.e. (Package-I, Khuzdar-Ziddi & II, Ratodero-Shahdadkot) in 1992. Later on in order to complete the link between Khuzdar and Ratodero other three packages were also taken up by NHA from 2004 to 2006, these three packages are still under progress.

Package No	Chainage	Length (Km)	Status
Package-I	Km 0+000 to km 35+000	35	Completed

Package-II	Km 184+000 to km 213+000	29	Completed
Package-III	Km 35+000 to km 84+500	50	Under Construction
Package-IV	Km 84+500 to km 126+000	42	Under Construction
Package-V	Km 127+000 to km 184+000	57	Under Construction

1.3 Section-IV (Package-IV): This 33 km package was awarded to M/s Sardar M Ashraf D Baloch (SMADB) in April 2004 at a cost of Rs. 524.85 million with December 2006 as the original completion date.

2. Background:

2.1 M/s ACC was assigned the task as design consultants for finalizing the design as well as the best suitable alignment. After utmost efforts ACC finalized the design by improvising through Ground reconnaissance, review of stereo images from SOP, and aerial reconnaissance using a Cessna chartered plane were carried out to assess possible routes for the project road. 5 different alternatives were considered (Including Tunnel) to select the most economical and feasible route for the project.

2.2 Variation Order No.04 of M/s SMAD Baluch against Section-IV, Package-IV of Khuzdar-Shahdadkot section of M-8. Project holds prime importance because it falls under the alignment of CPEC Eastern Corridor and this section of M-8 is to be completed by December, 2016.

2.3 Variation Order No.04 of the subject contract is in process of approval since March, 2015 however final approval could not be accorded due to non-finalization of the classification and quantity of the rock cutting which is major item in this Variation.

3.0 Earlier decisions of Executive Board regarding Variation Order No.04:

It is submitted that case has already been presented before National Highway Executive Board thrice, decision and instructions of National Highway Executive Board along with action taken are as follows:

3.1 246th Meeting, March 3, 2015:

Decision:

The Executive Board approved as under:

- a. Payment of 50% of the IPCs of the contractor.
- b. Submission of fact finding report as per deliberation of the Board for decision of VO No 04 in the next meeting.

Action:

In compliance with NHA Executive Board decision following fact finding committee was constituted by Chairman NHA:

- a. Mr. Sami-ur-Rehman General Manager (Sindh-South) NHA
- b. Mr. Asif Masood Memon Dy. Director (Maint) Hyderabad

Above referred fact finding committee after conducting site visit submitted its report in National Highway Executive Board.

3.2 249th Meeting, May 25, 2015:

Accordingly report of the fact finding committee was presented in 249th meeting with the following recommendations:

- a. The Variation Order No. 4 may be approved and the pending IPC of contractor may be released immediately.
- b. The classification of excavation materials specially for item No.106b (i) for which the cost has been increased tremendously need to be seen / examine again. A survey team of NHA may also be detailed to see the level differences and cross sections due to which quantities has been increased and if any deviation from the approved VO 4 is observed, it will be sent to the consultants for adjustment of VO 4 and in IPC's, and same may be brought in the knowledge of Executive Board
- c. The consultant and the contractor may be called for meeting.

Decision:

The Executive Board approved the Variation Order No.04 of Contractor M/s SMADB for Construction of Khuzdar-Shahdadkot Road, Section-IV, Package-IV (M-8, Km 84+500 to Km 136+000) costing Rs. 695.281 million on provisional basis subject to finalization of the quantities and classification of the following committee:

- a. GM (Monitoring & Inspection)
- b. Material Expert.

Action:

Inspection team comprising of following visited M-8 Baluchistan (South) region from 11th January to 12th January, 2016:

- a. Mr. Azhar Yaseen -Senior Expert M&I
- b. Lt Col Syed Ali Baqar Zaidi (Ret) -Zonal Expert M&I

Major recommendations of the committee are as follows:

a. Since the quantity and quality (hardness) are the main factors of disagreement between the consultant and contractor, it is suggested that an independent team of consultant be activated to reach to an amicable decision between the two parties.

b. Presently the best assessment on the classification of the executed rock could be 50% hard rock and 50% medium rock.

2.10 For the early completion of the Package-IV construction VO 4 could be approved as early as possible

3.3 Third Party Validation:

As per recommendation in the committee constituted under the directions of NHEB in 249th meeting, M.s NESPAK was appointed as third party consultant to firm up the recommendation and finalization of the classification and quantity of the rock cutting. Report of Mr. Rizwan Baig (General Manager, NESPAK) is as follows:

a. It is also acknowledged that this reach (km 11+600 to km 12+000) is 100% hard rock. It is also observed at site that (particularly for this reach) roadway excavated material during execution may directly fall down in deep valley and difficult to retrieve or retain on any pedestal for dumping/transportation and utilizing in proposed embankment reaches through dump trucks.

b. In my opinion, the fell down material may be declared as surplus because no resources to be deployed to retrieve this material from deep gorge having no access from any side.

3.4 264th Meeting, May 16, 2016:

Recommendations of the third party validation (M/s NESPAK) were presented in 264th meeting of National Highway Executive Board; fiscal summary of the variation is as follows:

Cost effect of V.O. No.4 (Presented Earlier before NHEB) was **Rs. 695.281** Million (Agreed In-principle by NHEB in 249th Meeting).

Decision:

The Executive Board deferred the proposal of VO No.04 for construction of Package-IV of Khuzdar-Shahdadkot Section-IV of M-8; being executed by M/s SMAD Baluch, largely for timely development of CPEC connectivity, for consideration in the next meeting on receipt of the report on in house discussion as per Para 15.9 above,

mean while payment of IPC pending due to approval of this Variation Order must be released.

Action:

As per directions of National Highway Executive Board in its 264th meeting dated 16-05-2016, an in house committee was formed by Chairman NHA to discuss and evaluate Variation Order No.04 in order to develop consensus and formulate recommendations for formal approval of the National Highway Executive Board, members of in house committee are as follows:

Mr. Raja Nowsherwan,	Member (Planning)
Mr. Arshad Mehmood CH.	Member (Eng.Cord)
Muhammad Yousaf Barakzai	Member (West-Zone)
Mr. Salman Rashid	Secretary (Cord)
Mr. Ramesh Raja	GM (Const), Bal South
Mr. Rizwan Baig	GM (NESPAK)
Mr. Akhter Mir	The Engineer ACC
Mr. Azher Yasin	M & I Expert

3.5 Meeting of Committee:

A meeting of the committee was held in the office of Member (Planning) NHA HQ, on 26/05/2016, following instructions were issued:

- a. It was mutually agreed between the committee members that M & I experts in coordination with the supervisory consultants M/s ACC and third party consultant M/s NESPAK will verify the quantity and classification of the rock cutting incorporated in the Variation Order No.04 as per approved template.
- b. Site authorities will fully cooperate with the M & I Experts.

Team comprising of the following members visited site on 18th July, 2016:

- a. Mr. Azher Yasin Senior M & I Expert
- b. Lt Col Syed Ali Baqar Zaidi (Rtd) Zonal Expert M & I
- c. Mr. Att-ul-Mohsin DD (QS) NHA

3.6 Opinion of the team is as follows:

- a. Keeping in view the site situation, the team is of the view that the quantities worked out by the team and that by M/s NESPAK are approximately the same, Whereas the contractor's claim seems to be on higher side. Also, the quantities of The Engineer (M/s ACC) are not conforming to site conditions.
- b. It is also felt that 25 meters high retaining wall, proposed by the designer towards the end of the reach, be eliminated keeping in view the precipice nature of the hill side. Shifting of the alignment towards hill side has

increased the excavation quantities but will eliminate the need of retaining wall.

4. **Fiscal Summary of Variation Order No.04:**

Original Contract Cost	Rs. 524,857,483
Variation Order No.01	Rs. 1,973,477
Variation Order No.02	Rs. 1,242,796,054
Variation Order No.03	Rs. 437,651,771
Revised cost with VO No.03	Rs. 2,207,778,785
This Variation Order No.04	Rs. 695,281,876
Revised Cost with VO-04	Rs. 2,902,560,659

	Description (Variation Order No.04)	Cost Effect (Rs)
1.	Earthwork	1,104,633,666
2.	Sub Base & Base	-
3.	Surface Course & Pavement	-
4&5.	Structures & Drainage Work	(409,470,270)
6.	Ancillary items (Metal Card, Gantry & TP paint)	38,469
7.	Miscellaneous items	80,000
	Total:	695,281,876

5. **Final opinion of site authorities:**

After detailed deliberations consensus was reached about rock cutting quantities and accordingly they were taken up in this Variation Order No.04.

6. **Recommendation of In-house committee:**

A discussion was carried out in the office of chairman NHA between senior members of In-house committee, wherein it was decided that Variation Order No.04 amounting to Rs. 695.28 Million will be forwarded to National Highway Executive Board for consideration in line with the earlier decision and recommendations.

7. **Decision solicited:**

National Highway Executive Board is requested to accord formal approval of Variation Order No.04 of M/s SMAD Baluch against construction of Section-IV Package-IV, M-8 amounting to **Rs. 695.28 Million** which is **31.5%** above than approved cost along with revised date of completion as **31st December, 2016** (NHEB has already accorded provisional approval of VO-04 in its 249th meeting dated May 25, 2015).

National Highway Authority

**CONSTRUCTION OF HASSANABDAL – HAVELIAN E-35 – ICB-E-35-I: BURHAN
TO JARIKAS (KM 0+000 TO KM 20+400)**

PACKAGE-I

Working Paper

For Executive Board

Description and Background

1. The Project PC-1 for the Construction of Hassanabdal – Havelian Section of E-35 was initially approved by ECNEC on 03 July 2014 as a 4-Lane controlled access facility at a cost of Rs. 30.986 Billion. The project was conceived and submitted to ADB for financing. ADB approved the financing of the Project under National Trade Corridor Highway Investment Programme (Tranche 2) vide Loan 3121/ Grant 434 (T2).
2. Understanding the need to upgrade the project to 6 Lane due to the upcoming China Pakistan Economic Corridor (CPEC), Honorable Prime Minister of Pakistan directed to upgraded the facility from 4-Lane to 6-Lane Motorway dated 14 Dec 2013. Accordingly revised PC-1 of the project was submitted before ECNEC for conversion of the facility from 4-Lane to 6-Lane Motorway. **ECNEC during meeting dated 22.08.2016 approved revised PC-1 cost of Rs. 34.165 Billion for construction of Hassanabdal – Havelian Motorway as a 6-Lane facility.**
3. ADB being Financing Agency initially agreed to finance the widening of Structures only to incorporate 6 Lanes, therefore accordingly Variation Order No 1 pertaining to the widening of Structures from 4 Lane to 6 Lane was submitted and got approved on 27th January 2016. Now ADB has given their concurrence for revised x-section of 6-Lane configuration for whole of the project. Therefore this variation order # 2 has been prepared by incorporating overrun quantities of Earth work of additional 2 Lanes on BOQ rates. Evaluation of rates of certain items qualify condition spelled out under Clause 12.3 and determined by The Engineer under Clause 3.5 Condition of Contract which are total 03 in number are also included in this Variation Order:

Description of Variation Order No 2.

The original Contract BOQ quantities for original provision of 4 Lane facility were found short of the quantum of Work under Items Nos. 108c, 401a2iii, and 404b (culverts), and the same further increased due to up gradation of the facility to 6-Lane Motorway in accordance to the directions of Honorable Prime Minister of Pakistan. Revised Bill of

Quantities & resulting costs of above said changes, are appended herewith this submission. In order to incorporate these changes in the Contract ambit, initiation of a Variation Order under the provisions of Clause-13 has become imminent and hence, is initiated under this submission.

Justification for Variation Order No 2.

The enhancement of quantities of Works were scrutinized in two steps separately and are dilated as under:

Step-I: During scrutiny of original BOQ with respect to Construction Plans and Drawings, issued by the Engineer for a 4 Lane configuration of the Expressway, it was observed that the quantities of some of the items are falling short to complete the works. The deficient quantities were thus estimated to arrive at comprehensive executive quantities, fully covering these items of work for a 4 Lane configuration execution. Original BOQ Rates were used for costing of these additional quantities except for some of the item qualifying the criteria for evaluation of rate spelled out under clause 12.3 and hence The Engineer of the project determined these new rates under clause 3.5 of the contract, Detail of these rates and it's overall effect on project cost is summarized as under;

BOQ Item	Description	Unit	BOQ Rate	Rate		
				Contractor's Claimed	CSR-2014	New Rate Determined by The Engineer
108c	Formation of Embankment from borrow Excavation in Common Material	CM	259	1,175.71	433.38	312
Non BOQ	Benching on Formatted Slope	SM	-	-	-	52
401a2iii	Concrete Class A2 (Elevated) Box Culvert	CM	10,722	16,544.70	11,791.85	11,239
404b	Reinforcement as per AASHTO M-31 Grade-60 for Culverts	Ton	114,490	131,335.77	116,539.73	116.604
Overall Cost effect due to new rates for revised scope of works					Rs. 73,706,292/-	

Step-II: As the status of E-35 has now been changed to a Motorway with 6 Lane configurations under an Executive Order, thus quantities for these additional 2 more Lanes

have also been calculated. It should be noted that embankment formation with 4 Lane configuration and relevant structures had already been executed in a number of stretches on **Package-I**, which required modification of the executed works to the new configuration and execution of 6 Lane embankment and Roadway structure in virgin areas. The entire exercise involved additional works to be executed and involved additional quantities of such works. Cost estimations were carried out on BOQ rates for all those additional quantities and new rates as determined by The Engineer under Clause 3.5 of the Contract has been considered for above referred 03 items in this Variation Order.

The dilations provided in the above Paras, comprehensively explain the causes for the subject changes in quantities and the costs for eventual conversion of the 4 Lane Expressway to 6 Lane Motorway, so as to effectively meet the traffic requirements, which shall enhance manifold, with the China Pakistan Economic Corridor coming into full operational use. In the scenario, the enhanced quantities and costs of the Work are fully justified.

Detail of Variation Order # 2 is as under

Original Contract Cost:	Rs.7,376,968,486.00
Cost of variation Order No.1	Rs. 1,086,896,037.00
Revised contract Cost as per V.O # 1:	Rs.8,463,864,524.00
%age increase of Variation Order No. 1 w.r.t Original Cost	14.73%
Cost of Variation Order No. 2	Rs. 713,860,762.00
Percentage increase of VO# 02 w.r.t original contract cost	9.68%
Increased Amount Due to Quantities	
From 4 Lane to 6 Lane:	Rs. 640,154,469.00
Increased Amount Due to increase in 4 Lane	
Quantities on new Rates:	Rs. 73,706,292.00
Revised contract Cost including V.O # 1 & V.O # 2:	Rs. 9,177,725,285.00
Total %age increase w.r.t original contract cost	24.41%

Recommendation:

NHA's Executive Board is requested for soliciting the approval of Variation Order # 2 amounting to Rs. 713,860,761.00 with the revised contract cost Rs. 9,177,725,285.00 which is 24.41% above the original contract amount and the revised completion by 30th August 2017.

National Highway Authority

**CONSTRUCTION OF HASSANABDAL – HAVELIAN E-35 – ICB-E-35-II:
JARIKAS ~ Sarai Saleh (KM 20+400 to KM 39+611)
PACKAGE –II**

Working Paper

For Executive Board

Description and Background

1. The Project PC-1 for the Construction of Hassanabdal – Havelian Section of E-35 was initially approved by ECNEC on 03 July 2014 as a 4-Lane controlled access facility at a cost of Rs. 30.986 Billion. The project was conceived and submitted to ADB for financing. ADB approved the financing of the Project under National Trade Corridor Highway Investment Programme (Tranche 2) vide Loan 3121/ Grant 434 (T2).
2. Understanding the need to upgrade the project to 6 Lane due to the upcoming China Pakistan Economic Corridor (CPEC), Honorable Prime Minister of Pakistan directed to upgraded the facility from 4-Lane to 6-Lane Motorway dated 14 Dec 2013. Accordingly revised PC-1 of the project was submitted before ECNEC for conversion of the facility from 4-Lane to 6-Lane Motorway. ECNEC during meeting dated 22.08.2016 approved revised PC-1 cost of Rs. 34.165 Billion for construction of Hassanabdal ~ Havelian Motorway as a 6-Lane facility.
3. ADB being Financing Agency initially agreed to finance the widening of Structures to incorporate 6 Lanes, therefore accordingly Variation Order No 1 pertaining to the widening of Structures from 4 Lane to 6 Lane was submitted and got approved on 27th January 2016. Now ADB has given their concurrence for revised x-section of 6-Lane configuration for whole of the project. Therefore this variation order # 2 has been prepared by incorporating overrun quantities of Earth work of additional 2 Lanes on BOQ rates. Evaluation of rates of certain items qualifying condition spelled out under Clause 12.3 and determined by The Engineer under Clause 3.5 Condition of Contract, which are total 04 in number are also included in this Variation Order:

Description of Variation Order No 2.

The original Contract BOQ quantities for original provision of 4 Lane facility were found short of the quantum of Work under Items Nos. 106a, 108c, 401a2iii, 404b (culverts) & 404b (bridges) and the same further increased due to up gradation of the facility to 6-Lane Motorway Upon the directions of Honorable Prime Minister of Pakistan. Revised Bill of quantities and resulting costs of above said changes, are appended herewith this

submission. In order to incorporate these changes, are appended herewith this submission. In order to incorporate these changes in the Contract ambit, initiation of a Variation Order under the provisions of Clause-13 has become imminent and hence, is initiated under this submission.

Justification for Variation Order No 2.

The enhancement of quantities of works have been scrutinized in two steps separately and are dilated as under:

Step-I: During scrutiny of the original BOQ with respect to Construction Plans and Drawings, issued by the Engineer for a 4 Lane configuration of the Expressway, it was observed that the quantities of some of the items are falling short to complete the works. The deficient quantities were thus estimated to arrive at comprehensive executive quantities, fully covering these items of work for a 4 Lane configuration execution. Original BOQ Rates were used for costing of these additional quantities except for some of the item qualifying the criteria for evaluation of rate spelled out under clause 12.3 and hence The Engineer of the project determined these re-appropriated rates under clause 3.5 of the contract, Detail of these rates and it's overall effect on project cost is summarized as under;

BOQ Item	Description	Unit	BOQ Rate	Rate		
				Contractor's Claimed	CSR-2014	New rate Determined by The Engineer
106a	Excavate unsuitable surplus Common Material.	CM	83	422.37	362.52	101
108c	Formation of Embankment from borrow Excavation in Common Material	CM	296	1,179.07	433.38	357
Non BOQ	Benching on Formatted Slope	SM	-	-	-	52
401a2iii	Concrete Class A2 (Elevated) Box Culvert	CM	10,946	19,233	11,791.85	11,474
404b	Reinforcement as per AASHTO M-31 Grade-60 for Culverts & Bridges	Ton	111,232	132,257	116,539.7	113,286
Overall Cost effect due to new rates for revised scope of works					Rs. 210,345,595/-	

Step-II: As the status of E-35 has now been changed to a Motorway with 6 Lane configurations under an Executive Order, thus quantities for these additional 2 more Lanes have also been calculated. It should be noted that embankment formation with 4 Lane configuration and relevant structures had already been executed in a number of stretches on **Package-II**, which required modification of the executed works to the new configuration and execution of 6 Lane embankment and Roadway structure in virgin areas. The entire exercise involved additional works to be executed and involved additional quantities of such works. Cost estimations were carried out on BOQ rates for all those additional quantities and new rates as determined by The Engineer under Clause 3.5 of the Contract has been considered for above referred 05 items in this Variation Order.

The dilations provided in the above Paras, comprehensively explain the causes for the subject changes in quantities and the costs for eventual conversion of the 4 Lane Expressway to 6 Lane Motorway, so as to effectively meet the traffic requirements, which shall enhance manifold, with the China Pakistan Economic Corridor coming into full operational use. In the scenario, the enhanced quantities and costs of the Work are fully justified.

Detail of Variation Order # 2 is as under

Original Contract Cost:	Rs. 6,775,233,160.00
Cost of variation Order No.1	Rs. 815,366,655.00
Revised Contract Cost as per V.O # 1:	Rs. 7,590,599,815.00
%age increase of Variation Order No. 1 w.r.t Original Cost	12.03%
Cost of Variation Order No. 2	Rs. 1,720,988,804.00
Percentage increase of VO# 02 w.r.t original contract cost	25.40%
Increased amount due to Quantities Change from 4 Lane to 6 Lane	
	Rs. 1,510,643,506.00
Increased amount due to increase in 4 Lane Quantities on new Rates:	
	Rs. 210,345,595.00
Revised contract Cost including V.O # 1 & V.O # 2:	Rs. 9,311,588,619.00
Total %age increase w.r.t original contract cost	37.44%

Recommendation:

NHA Executive Board is requested for soliciting the approval of Variation Order # 2 amounting to Rs.1,720,988,804.00 with the revised contract cost Rs. 9,311,243,321.00 which is 37.44% above the original contract amount and the revised completion by 30th August, 2017.

WORKING PAPER FOR
NHA Executive Board For
Malakand Tunnel Project

Background:

As per original PC-1 proposed alignment of the road cum tunnel takes off from Dargai at 470 meters above the mean sea level and after passing through Malakand at 835 meters above the mean sea level and Purano Qulay at 724 meters above the mean sea level, terminates at Bat Khela at 663 meters above the mean sea level. The alignment / route of the proposed road / tunnel is based on a study in which 04 possible alternatives were examined.

The existing N- 45 starts from the Dargai plane area (altitude of 470m~500m), passes through the Malakand hill and ends in Batkhela (altitude of 663m). The total length of the Project Road is 14 km. Project Area is located in Malakand District in Khyber Pakhtunkhwa Province. This Route is connected from Dargai to Batkhela. The Consultant conducted detailed design based on Feasibility Study of the project conducted in 2011 with following scope.

Classification	Work Scope
Roadway (Main Arterial Road)	Total Length: approximately 9.7 Km. Design Speed: 90km/h (Mountain Area : 60km/h, Hilly Area: 70km/h)
Tunnels	Number of Tunnels: 2 Nos (2 directions) : 3.15 km
Bridges	Number of Bridges: 3 Nos.

- Project Area: Malakand District in Khyber Pakhtunkhwa Province, Northwest of Nation
- Road Class: N-45, Linking Dargai to Batkhela, 14 Km
- Road Function: Principal arterial road
- Road Condition: Frequent traffic congestion and sometimes blocked by poor alignment, slope collapse, heavy snowfall
- New Malakand Tunnel will treat the future traffic volume and recovering north-west main arterial road

Name of the Project:

PC-I for Malakand Tunnel Project

Objectives of Project

- To mitigate traffic congestion and to prevent potential traffic accident factors.
- To increase the accessibility of project region and to promote the development of regional economy.
- To construct the national main arterial road network for achieving balanced national development.

Location of the Project

Existing Highway N - 45 (Nowshera - Malakand -Chitral, Length = 309 Km) is the main road connecting Northwest area to the rest of Pakistan on a North - South axis. Malakand Pass (Dargai - Batkhela, Length = 14 Km) on N- 45 is situated in hilly terrain with steep slope and alignment defects caused traffic congestion and possible traffic accidents in severely winding curves.

Fragile geology, steep slope and rainfall cause the land slide and thus blocked the road. The project is a remedial measure by NHA to deal with such problems through construction of an alternative Malakand Pass (Length = 9.77 Km.) with Tunnel. Map shows the location & proposed alignment is placed.

Intersection Capacity Analysis

Year	Traffic Indicator	Intersection at Start Point	Intersection at End Point
2029 (after 10 years from the opening)	Traffic Volume(veh/h)	2,186	2,186
	Control Delay(sec/veh)	16.2	18.5
	LOS	B	B
2039 (after 20 years from the opening)	Traffic Volume(veh/h)	2,965	2,965
	Control Delay(sec/veh)	22.1	78.1
	LOS	C	E

PC-I FOR Malakand Tunnel Project
Cost of Project as per Revised PC-1

Bill No	Description	Total Amount (9.77 km)	
		PKR	\$
1	Earth Work	460,921,197.95	\$4,389,725.69
2	Sub Base & Base Course	459,692,241.28	\$4,378,021.35
3	Surfacing	155,207,253.93	\$1,478,164.32
4a1	Structures (Bridge No. 01)	37,422,350.22	\$356,403.34
4a2	Structures (Bridge No. 02)	127,203,036.83	\$1,211,457.49
4a3	Structures (Bridge No. 03)	881,476,564.19	\$8,395,014.90
4b	Structures (Box Culverts)	56,330,964.07	\$536,485.37
4c	Structures (Underpasses)	26,371,936.36	\$251,161.30
4d	Structures (Pipe Culverts 7Nos)	10,394,495.96	\$98,995.20
4e	Structures (Retaining Walls 1600M)	209,890,175.40	\$1,998,954.05
4f (B1)	Excavation (open /Underground)	2,777,255,251.53	\$26,450,050.01
4f (B2)	Rock Bolts & Other Steel Support etc	1,005,909,283.93	\$9,580,088.42
4f (B3)	Shotcrete and Concrete Works	4,238,520,879.74	\$40,366,865.52
4f (B4)	Drainage and Miscellaneous Works	869,474,557.83	\$8,280,710.07
4f (B5)	Monitoring & Geotechnical Instrumentation	81,472,821.00	\$775,931.63
4f (B6)	Additional Process	2,843,463,969.13	\$27,080,609.23
5	Drainage and Erosion Works	372,652,106.35	\$3,549,067.68
6	Ancillary Works (Road Safety Furniture)	116,421,066.60	\$1,108,772.06
7	General Items	99,913,038.00	\$951,552.74
8a	Toll Plaza	95,028,024.30	\$905,028.80
8b	Offices & Presidential Building	9,915,387.41	\$94,432.26
8c	Computer Room	882,363.53	\$8,403.46
9	Intelligent Transportation System	2,500,000.00	\$23,809.52
10	Electrical Works	6,940,000.00	\$66,095.24
11	Plumbing Works	2,357,200.00	\$22,449.52
12	HVAC	870,000.00	\$8,285.71
13	Fire Fighting	91,000.00	\$866.67
14	Dismantling Compensation (Clearance of ROW)	30,000,000.00	\$285,714.28
15	Relocation of Utilities	100,000,000.00	\$952,380.95
	Total Amount	15,078,577,165.56	\$143,605,496.81
	Consultancy Charges I/C Design & Construction Supervision @ 3%	465,928,034.42	\$4,437,409.85
	Physical Contingencies @3%	452,357,314.97	\$4,308,164.90
	Price Escalation @ 6.5% for 2 nd year & 13% for 3 rd year	1,553,093,448.05	\$14,791,366.17
	NHA Establishment Charges @ 1%	155,309,344.81	\$1,479,136.62
	Land Acquisition,	0.00	-
	Environment Afforestation Cost @0.5%	77,654,672.40	\$739,568.31
	Grand Total Cost (Rs. In Million)	17,782,919,980.20	\$169,361,142.66

**PC-I FOR Malakand Tunnel Project
Cost of Project as per Revised PC-1**

Bill No	Description	Total Amount (9.77 km)	
		PKR	\$105.00
1	Earth Work	460,921,197.95	\$4,389,725.69
2	Sub Base & Base Course	459,692,241.28	\$4,378,021.35
3	Surfacing	155,207,253.93	\$1,478,164.32
4a1	Structures (Bridge No. 01)	37,422,350.22	\$356,403.34
4a2	Structures (Bridge No. 02)	127,203,036.83	\$1,211,457.49
4a3	Structures (Bridge No. 03)	881,476,564.19	\$8,395,014.90
4b	Structures (Box Culverts)	56,330,964.07	\$536,485.37
4c	Structures (Underpasses)	26,371,936.36	\$251,161.30
4d	Structures (Pipe Culverts 7Nos)	10,394,495.96	\$98,995.20
4e	Structures (Retaining Walls 1600M)	209,890,175.40	\$1,998,954.05
4f (B1)	Excavation (open /Underground)	2,777,255,251.53	\$26,450,050.01
4f (B2)	Rock Bolts & Other Steel Support etc	1,005,909,283.93	\$9,580,088.42
4f (B3)	Shotcrete and Concrete Works	4,238,520,879.74	\$40,366,865.52
4f (B4)	Drainage and Miscellaneous Works	869,474,557.83	\$8,280,710.07
4f (B5)	Monitoring & Geotechnical Instrumentation	81,472,821.00	\$775,931.63
4f (B6)	Additional Process	2,843,463,969.13	\$27,080,609.23
5	Drainage and Erosion Works	372,652,106.35	\$3,549,067.68
6	Ancillary Works (Road Safety Furniture)	116,421,066.60	\$1,108,772.06
7	General Items	99,913,038.00	\$951,552.74
8a	Toll Plaza	95,028,024.30	\$905,028.80
8b	Offices & Presidential Building	9,915,387.41	\$94,432.26
8c	Computer Room	882,363.53	\$8,403.46
9	Intelligent Transportation System	2,500,000.00	\$23,809.52
10	Electrical Works	6,940,000.00	\$66,095.24
11	Plumbing Works	2,357,200.00	\$22,449.52
12	HVAC	870,000.00	\$8,285.71
13	Fire Fighting	91,000.00	\$866.67
14	Dismantling Compensation (Clearance of ROW)	30,000,000.00	\$285,714.28
15	Relocation of Utilities	100,000,000.00	\$952,380.95
	Total Amount	15,078,577,165.56	\$143,605,496.81
	Consultancy Charges I/C Design & Construction Supervision @ 3%	465,928,034.42	\$4,437,409.85
	Physical Contingencies @3%	452,357,314.97	\$4,308,164.90
	Price Escalation @ 6.5% for 2 nd year & 13% for 3 rd year	1,176,909,013	\$11,208,657.26
	NHA Establishment Charges @ 1%	155,309,344.81	\$1,479,136.62
	Land Acquisition,	100	-
	Environment Afforestation Cost @0.5%	77,654,672.40	\$739,568.31
	Security Charges @1%	150,785,772	\$1,436,054.97
	Grand Total Cost (Rs. In Million)	17,557,521,417.16	\$167,214,488.72

The Revised Cost has been estimated on the basis of the NHA Composite Schedule of Rates 2014. The Summary of Original and Revised cost of the project is given below:-

Cost (Millions) As per Revised PC-1

	Cost	FEC	Total Cost
Local Currency (PKR.)	17,782.92	-	17,782.92
Foreign Currency (US\$)	169,361	-	169,361

Salient Features of the Project

- **Traffic Lane:** The Single-lane Standard Width of NHA, 3.65m, was adopted considering the review for the AASHTO criterion and linkage to the Route N- 45, overall drive safety and local traffic.
- **Median Strip:** The NHA standard of **2.0m** was adopted, in order to ensure traffic safety and also to handle the increasing traffic volume.
- **Shoulder:** The NHA standard of **3.0m** was adopted, it would be helpful for protecting structures and for the emergency evacuation for the disabled car.

Financial Phasing:

Year Jan 2017 ~ June 2017	Rs. 1,938 million
Year July 2017 ~ June 2018	Rs. 7,104 million
Year July 2018 ~ Jan 2019	Rs. 3,875 million

Economic Analysis

The results of the economic analysis are summarized as under:

Benefit Cost Ratio @ 12% Discount Rate	:	1.66 : 1
Net Present Value	:	Rs.6,789.74 million
Internal Rate of Return	:	19.45%

Sensitivity Analysis

Results @ 12% Discount Rate	With 10% Increased Costs	With 10% Decreased Benefits	With 10 % Cost + & 10% Benefit
Internal Rate of Return (IRR)	17.90 %	17.74 %	16.28 %

Economic Analysis: Broad Criteria

The following broad parameters have been adopted:

- Economic Life: 25 Years
- Discount Rate: 12%
- Completion period: 2016 to 2019

Costs:

Projected PC-I financial cost of the project is Rs.17,782.92 million. In order to convert the financial costs into economic costs, a factor of 0.85 has been adopted. This factor ensures that elements of indirect or hidden part of all externalities, if present in the project cost are removed.

- Economic capital cost of the project phased over the period of implementation.
- Annual maintenance cost @ 1% of the Capital Cost has been taken throughout the economic life of 25 years of the project after Defect Notification Period.
- Periodic maintenances cost @ 10% has been taken at 10 years intervals following the opening of the project to the traffic.

Economic Analysis: Benefits

Vehicle Operating Costs:

Passenger Value of Time:

Accidents/Injuries/Loss (Damage) of vehicles:

Idle Running of Engines:

Saving in Distance

Results of Analysis

Analysis Description	As per Revised PC-1
Benefit Cost Ratio @ 12% Discount Rate:	1.08
NPV (Rs Million):	1,050.11
EIRR:	12.30%

Estimated Cost:

Estimated consultancy cost of the project would be Rs. 17,557 million.

Decision:

National Highway Executive Board (NHEB) is requested to recommend the PC-1 for Malakand Tunnel Project at a Cost of PKR 17,557 million for consideration and approval of CDWP/ECNEC.
